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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,631	12/13/2001	Brian Fahs	10019977-1	9217

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EXAMINER
RAMPURIA, SATISH

ART UNIT	PAPER NUMBER
2191	

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/020,631	FAHS ET AL.
	Examiner	**Art Unit**	
	Satish S. Rampuria	2191	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 August 2005*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5-9,13-17 and 21-24* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-9,13-17 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the RCE filed on Aug 18, 2005.

2.   Claims amended by the applicant: 1, 5, 6, 8, 9, 13, 14, 16, 17, 21, 22 and 24.

3.   Claims cancelled by the Applicant: 2-4, 10-12 and 18-20

4.   Claims pending in the application: 1, 5-9, 13-17, and 21-24.

5.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on Aug 18, 2055 has been entered.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this
title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a
whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said
subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1, 5-9, 13-17 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Stoodley in view of US Patent No. 6,263,491 to Hunt (hereinafter called Hunt).

Per claim 1:

Stoodley disclose:

- A computer-implemented method for analyzing a virtual function (col. 4, lines 28-30 "computer implemented method of compiling... a computer program for calling at least one... virtual function"), said method comprising:

- locating a virtual table for a virtual function (col. 4, lines 32-35 "determining... virtual functions... in a virtual function table"), said virtual table comprising a start address for said virtual function (col. 4, lines 35-45 "constructing said virtual function table... for any new virtual function introduced... virtual function includes an address adjustment value... each new virtual function comprises an address pointer representing one of the location of an address...");

- creating an instruction for said virtual function (col. 4, lines 48-49 "compiling a call to a virtual function"), said instruction comprising a control transfer function that directs execution to instrumentation code (col. 5, lines 21-22 "transferring execution of the program to the address indicated by the address pointer" and col. 4, lines 54-55 "determining a location of an entry for said virtual function in a virtual function table");

- rewriting said virtual table with a modified virtual table comprising an address for said instruction instead of said start address (col. 4, lines 40-46 "each entry for each remaining inherited virtual function and for each new virtual function comprises an address pointer representing one of the location of an address adjustment program and an address of said function");

Stoodley does not explicitly disclose wherein upon determining that a call to said virtual function

is a virtual function call, thereby directing execution to said instrumentation code; and executing

said instrumentation code to perform an instrumentation task for said virtual function.

However, Hunt discloses in an analogous computer system wherein upon determining

that a call to said virtual function is a virtual function call, thereby directing execution to said

instrumentation code (col. 3, lines 50 "instrumentation packages for performing operations on

the applications" and col. 11, lines 1-2 "calling indirectly through an interface's virtual function

table"); and executing said instrumentation code to perform an instrumentation task for said

virtual function (col. 9, lines 49-51 "The hybrid VFT implementation allows classes compiled by

an old compiler to be integrated with newly compiled classes without recompilation of the old

classes").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time

the invention was made to incorporate the method upon determining that a call to said virtual

function is a virtual function call, thereby directing execution to said instrumentation code; and

executing said instrumentation code to perform an instrumentation task for said virtual function

as taught by Hunt into the method of analyzing and determining if the virtual function table exist

as taught by Stoodley. The modification would be obvious because of one of ordinary skill in the

art would be motivated to perform instrumenting on virtual functions to reduce the overhead for

particular operation as suggested by Hunt (col. 3, lines 18-37).

Per claim 7:

The rejection of claim 1 is incorporated, and further, Stoodley disclose:

- determining from which location said virtual function has been called (col. 4, lines 54-55 "determining a location of an entry for said virtual function in a virtual function table").

Claims 9 and 15 are the computer program product claim corresponding to method claims 1 and 7 respectively, and rejected under the same rational set forth in connection with the rejection of claims 1 and 7 respectively, above.

Claims 17 and 23 are the apparatus claim corresponding to method claims 1 and 7 respectively, and rejected under the same rational set forth in connection with the rejection of claims 1 and 7 respectively, above.

Per claim 5:

The rejection of claim 1 is incorporated, and further, Stoodley does not explicitly disclose performing a desired instrumentation task by said instrumentor; and resuming execution by said instrumentor at said start address previously contained in said virtual table.

However, Hunt discloses in an analogous computer system performing a desired instrumentation task by said instrumentor (col. 3, lines 49-51 "Different versions… are packaged in different instrumentation packages for performing operations on the application"); and resuming execution by said instrumentor (col. 44, line 3 "resumes application execution") at said start address previously contained in said virtual table (col. 44, lines 6-8 "leaving the instrumentation runtime firmly embedded in the application's address space").

The feature of instrumenting and resume execution at an address would be obvious for the reasons set forth in the rejection of claim 1.

Per claim 6:

The rejection of claim 1 is incorporated, and further, Stoodley does not explicitly disclose overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task; and providing an instruction at the end of said instrumentation code wherein said instruction points back to said start address previously contained in said virtual table.

However, Hunt discloses in an analogous computer system overwriting said instrumentation code with instrumentation code which performs a desired instrumentation task (col. 45, lines 3-5 "the new imports section 670 can be overwritten with a binary rewriter to include the second library instead of the first, and the application re-binded"); and providing an instruction at the end of said instrumentation code wherein said instruction points back to said start address previously contained in said virtual table (col. 45, lines 22-25 "an interface is a pointer to a virtual function table (VTBL, pronounced "V-Table"). A component client always accesses an interface through an interface pointer (a pointer to the pointer to a virtual function table)").

The feature of overwriting instrumenting code and provide an instruction at an address would be obvious for the reasons set forth in the rejection of claim 1.

Per claim 8:

The rejection of claim 1 is incorporated, and further, Stoodley disclose:

- maintaining a mapping between said start address for said virtual function and said new address for said virtual function (col. 4, lines 61-65 "each entry for each remaining inherited virtual function and for each new function comprises an address pointer representing one of the location of an address adjustment program and an address of said function").

Claims 13, 14 and 16 are the computer program product claim corresponding to method claims 5, 6, and 8 respectively, and rejected under the same rational set forth in connection with the rejection of claims 5, 6, and 8 respectively, above.

Claims 21, 22 and 24 are the apparatus claim corresponding to method claims 5, 6, and 8 respectively, and rejected under the same rational set forth in connection with the rejection of claims 5, 6, and 8 respectively, above.

Response to Arguments

8.   Applicant's arguments with respect to claim 1, 9, 17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
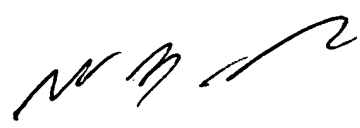
Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Satish S. Rampuria** whose telephone number is **(571) 272-3732**. The examiner can normally be reached on **8:30 am to 5:00 pm** Monday to Friday except every other Friday and federal holidays. Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: 571-272-2100**

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wei Y. Zhen** can be reached on **(571) 272-3708**. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Satish S. Rampuria
Patent Examiner/Software Engineer
Art Unit 2191
10/31/2005

WEI Y. ZHEN
PRIMARY EXAMINER